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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/065,757	05/24/1993	SHUNPEI YAMAZAKI	0756875	3615
31780	7590	07/12/2005	EXAMINER	
ERIC ROBINSON PMB 955 21010 SOUTHBANK ST. POTOMAC FALLS, VA 20165			KOSLOW, CAROL M	
			ART UNIT	PAPER NUMBER
			1755	

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

08/065,757

Applicant(s)

YAMAZAKI, SHUNPEI

Examiner

C. Melissa Koslow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 6,8,10,11,18-20,22 and 39-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6,8,10,11,18-20,22 and 39-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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The finality of the rejection of the last Office action is withdrawn due to further reconsideration of the teachings of U.S. patent 6,630,425; upon further reconsideration of the teachings of claims 6, 8, 10 and 11 and upon further reconsideration of the teachings in the specification. The amendment of 29 June 2005 has been entered since the finality is being withdrawn. The amendment to the claims canceling claims 23-26 and 31-34 has overcome the 35 USC 112 rejection, the 35 USC 102(e) rejection and the 35 USC 101 rejection.

The indicated allowability of claims 18-20 and 22 is withdrawn upon further reconsideration of U.S. patent 6,630,425. Rejections based on the newly cited reference follow.

The disclosure is objected to because of the following informalities: Page 3, lines 4-15 teaches an formula (ii) which can be rewritten as  $(A_{2-x-x'}B_xB'_{x'})_{y+y'}Cu_{z+z'}O_{w+w'}$  which requires a minimum of 4 alkaline earth elements since it teaches B and B' are two or more alkaline earth elements each, has a value of  $y+y'$  in the range of 4-8 and has a  $w+w'$  in the range of 8-20. Lines 18-21 on page 3 give formulas which line 16 states are examples of formula (ii). These examples contain 2 or 3 alkaline earth elements, the amounts of the rare earth elements and alkaline earth elements in these formulas are outside ranges of  $y+y'$  and amounts of oxygen include values which are outside the taught range. Therefore, it is unclear how these formulas are examples of formula (ii). In addition, lines 1-4 teach that the formula (ii) is a subspecies of the formula  $(A_{1-x}B_x)_{2-4}Cu_{1-4}O_{4-10}$ . It is unclear how formula (ii) is a subspecies of this formula since the amounts of A, B, copper and oxygen are at least twice as much as that in  $(A_{1-x}B_x)_{2-4}Cu_{1-4}O_{4-10}$ . Examples 1-6 state that the powders are mixed in the proportion as required by formula (ii) but the y and y' values in the examples are outside the ranges of y and y' for this formula. Examples 6 and 9

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teach niobium as a part of the A element, but niobium is not a rare earth element as required by the specification. Appropriate correction is required.

Claims 39-44 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims include new matter. The claims teach A includes Yb; includes Y and Yb or includes Y; A' includes Gd or includes Yb; B includes Ba; and B' includes Ca; includes Sr or includes Sr and Ca. "Including" is an open-ended transitional term which means it covers the expressly recited subject matter alone or in combination with unrecited subject matter. The specification teaches A and A' are each selected from at least one rare earth element and B and B' are each selected from at least two alkaline earth elements on page 3. Thus the claimed definitions covers embodiments where A, A', B and B' is the specified element in combination with any other element besides rare earth elements and alkaline earth elements. These embodiments are not taught by the specification and thus are new matter. In addition, there is no support in the specification for claims 39-43 where B is Ba only and B' is Sr or Ca, only. The specification teaches tat for the claimed formula, B and B' must teach be at least two alkaline earth metals.

Claims 6, 8, 10 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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These claims are indefinite since the claimed specific formulas of  $\text{YbBaSrCu}_3\text{O}_{6-8}$ ,  $\text{YbBa}_{0.7}\text{Sr}_{0.6}\text{Ca}_{0.6}\text{Cu}_3\text{O}_{6-8}$ ,  $\text{Y}_{0.5}\text{Yb}_{0.5}\text{BaSrCu}_3\text{O}_{6-8}$  and  $\text{Y}_{0.5}\text{Yb}_{0.5}\text{BaCaCu}_3\text{O}_{6-8}$  do not fall within the claimed general formula. The claimed general formula is  $(\text{A}_{1-x}\text{B}_x)_y\text{Cu}_z\text{O}_w(\text{A}_{1-x'}\text{B}'_{x'})_{y'}\text{Cu}_{z'}\text{O}_{w'}$ , where  $0.1 \leq x < 1$ ,  $0.1 \leq x' < 1$ ,  $y$  and  $y'$  are each in the range of 2.5-3.5,  $z$  and  $z'$  are each in the range of 1.5-3.5 and  $w$  and  $w'$  are each in the range of 6-8,  $A$  is at least one rare earth element and  $B$  and  $B'$  are each at least two alkaline earth elements. Thus, the formula required the presence of at least four alkaline earth elements. This formula can be rewritten as  $(\text{A}_{2-x-x'}\text{B}_x\text{B}'_{x'})_{y+y'}\text{Cu}_{z+z'}\text{O}_{w+w'}$ , where  $0.1 \leq x < 1$ ,  $0.1 \leq x' < 1$ ,  $0.1 \leq x+x' < 2$ ,  $y$  and  $y'$  are each in the range of 2.5-3.5,  $y+y'=5-6$ ,  $z$  and  $z'$  are each in the range of 1.5-3.5,  $z+z'=3-7$ ,  $w$  and  $w'$  are each in the range of 6-8 and  $w+w'$  is 12-16.  $\text{YbBaSrCu}_3\text{O}_{6-8}$ ,  $\text{YbBa}_{0.7}\text{Sr}_{0.6}\text{Ca}_{0.6}\text{Cu}_3\text{O}_{6-8}$ ,  $\text{Y}_{0.5}\text{Yb}_{0.5}\text{BaSrCu}_3\text{O}_{6-8}$  and  $\text{Y}_{0.5}\text{Yb}_{0.5}\text{BaCaCu}_3\text{O}_{6-8}$  do not contain the required four alkaline earth elements, the claimed required amount of oxygen, Yb or Yb and Y and Ba and at least one of Sr and Ca.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 18, 19, 20, 22, 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 6,630,425 in view of U.S. patents 6,635,603 and 6,638,894.

The reference teaches superconductive ceramics having the formula  $\text{Ba}_{2-y}\text{Y}_{1-z}\text{X}_{y+z}\text{Cu}_3\text{O}_x$ , where  $z+y$  is 0.3-1,  $X$  is at least one of Ca, Sr and a rare earth element,  $x$  is the amount of oxygen and at least 50 at% of Ba and Y are unsubstituted. Thus if  $X$  is Ca and/or Sr,  $z=0$  and  $y$  is 0.3-1,

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if X is at least one rare earth element,  $y=0$  and  $z=0.3-0.5$  and if X is an alkaline earth and rare earth element,  $z \leq 0.5$  and  $y \leq 1$ , and  $z+y$  is  $0.3-1$  (col 2, lines 56-62. The amount of oxygen is in the range of about 6.5-7.1 (col. 4, lines 40-45). The reference suggests  $Y_{1-z}X_zBa_2Cu_3O_{6.5-7.1}$ , where  $z=0.3-0.5$  and X is a rare earth element, such as gadolinium or ytterbium. The suggested formula encompasses that claimed. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). The reference suggests the claimed composition.

The reference teaches the ceramic can have any shape but does not teach how to produce the ceramic. It is notoriously well known in the ceramic art that shaped perovskite oxide ceramics, which would include those of the reference, are conventionally produced by mixing together stoichiometric amounts of powders of oxides and/or carbonates of the required metals, compressing the mixed powder into a shape and sintering the shaped mixture at an elevated temperature for a sufficient time to cause the powders to form the sintered ceramic, as shown by column 5, line 64 through column 6, line 29 of U.S. patent 6,635,603 and column 7, line 63 through column 8, line 29 of U.S. patent 6,638,894. One of ordinary skill in the art would have found it obvious to use this conventional method to produce the taught ceramics having the formula  $Y_{1-z}X_zBa_2Cu_3O_{6.5-7.1}$ , where  $z=0.3-0.5$  and X is a rare earth element, such as gadolinium or ytterbium. This suggested process makes obvious the claimed method.

Claims 6, 8, 10 and 11 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. 112, second paragraph, set forth in this Office action.

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The cited art of record do not teach ceramics having the formulas  $\text{YbBaSrCu}_3\text{O}_{6-8}$ ,  $\text{YbBa}_{0.7}\text{Sr}_{0.6}\text{Ca}_{0.6}\text{Cu}_3\text{O}_{6-8}$ ,  $\text{Y}_{0.5}\text{Yb}_{0.5}\text{BaSrCu}_3\text{O}_{6-8}$  and  $\text{Y}_{0.5}\text{Yb}_{0.5}\text{BaCaCu}_3\text{O}_{6-8}$ . There is no teaching or suggestion in the cited art to replace all of Y in the taught formulas with Yb and there is no teaching or suggestion in the cited art of record of the claimed formulas where the total amount of substitution elements is 1.5. U.S. patent 6,630,425 teaches a maximum total amount of substitution elements is 1.0.

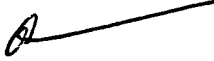
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cmk  
July 11, 2005

  
C. Melissa Koslow  
Primary Examiner  
Tech. Center 1700